TALENTS Are UNLIMITED:

It's Time to Teach Thinking Skills Again!

by Jane L. Newman

All students must learn to think! According to *Tough Choices or Tough Times* (2006), a report developed by the National Center on Education and the Economy (NCEE), the commission reports that America's position in the world's education league is declining. A larger number of our international counterparts are getting a better education and are positioning themselves as leaders in the global economy (NCEE, 2006, p. 4). In the 21st century, high levels of education are imperative.

> Strong skills in English, mathematics, technology and science, as well as literature, history, and the arts will be essential for many; beyond this, candidates will have to be comfortable with ideas and abstractions, good at both analysis and synthesis, creative and innovative, self-disciplined and well organized, able to learn very quickly and work well as a member of a team and have the flexibility to adapt quickly to frequent changes in the labor market as the shifts in the economy become even faster and more dramatic. (NCEE, 2006, p. 8)

The countries that produce the most important new products and new services will capture a premium in the world markets. More importantly, however, creativity and innovation will be key. According to NCEE (2006, pp. 5–6), leadership will depend on

> a deep vein of creativity that is constantly renewing itself, and on a myriad of people who can imagine how people can use things that have never been available before, create ingenious marketing . . . write books . . . imagine new kinds of software that will capture people's imagination and become indispensable to millions.

According to the commission's report (NCEE, 2006, p. 7), the "best employers will be looking for the most competent, most creative, most innovative [thinkers] on the face of the earth and will be willing to pay top dollar for their services." Moreover, this demand for top thinkers will exist not only for profession-

als and managers; everyone will need highly developed skills in creative and critical thinking. Routine work will be accomplished by machines (NCEE, 2006, p. 8).

The Problem

Our society recognizes that it is absolutely critical for all students (including our high-end learners who are gifted and talented) to learn to think, to become problem solvers, and to become creative producers of knowledge. However, many experienced teachers are frustrated and have compelling concerns about education today. According to McElroy (2005), past president of the American Federation of Teachers, "a major cause of . . . dissatisfaction is the federal No Child Left Behind Act (NCLB) and the way that it has been implemented" (p. 1). Likewise, in *Many Children Left Behind*, Meier and Wood (2004) and fellow authors maintain that although NCLB was intended to deliver higher quality, more equitable education, it has focused on teaching to the test, rather than using appropriate pedagogy to teach meaningful material, resulting in watering down the quality of teaching and learning.

Moreover, many students who demonstrate gifted and talented behaviors spend most of their time in the general classroom setting and are not receiving appropriate instruction designed to address their interests, abilities, needs, and individual characteristics (Archambault et al., 1993; Westberg, Archambault, Dobyns, & Salvin, 1993). As a whole, the group learns more rapidly than their age peers, thinks at higher cognitive levels, is interested in in-depth exploration of their interests, and asks stimulating questions. Yet, most teachers do not have adequate training to address these needs, and many contend that because of NCLB and other initiatives, there is inadequate time to plan appropriate learning experiences for these students.

Therefore, practitioners are perplexed, faced with the reality of the demands of NCLB and with a lack of understanding and time to meet the needs of students who are gifted and talented. One solution is that teachers, administrators, and parents in the fields of gifted education, general education, and special education must become partners and share responsibility for gifted and general education students among all school staff. Through differentiated instruction strategies (Tomlinson, 1995), they can tap into diverse interests, readiness levels, and learning profiles to craft a variety of learning activities at different levels in content, product, and processes, including thinking skills experiences. Through collaborative efforts, teachers can share expertise and insights as they plan for students, regardless of the nature of the program in which they specialize. In addition, collaboration enhances understanding and trust among fields of education, helps promotes connections between services in all educational fields, helps develop more positive attitudes toward gifted education, and improves learning for students.

The Talents Unlimited Model

A model for which 35 years of research, development, and diffusion has proven effective repeatedly in identifying and nurturing each student's multiple-thinking talents is the Talents Unlimited model (TU; Chism & McLean, 1980; Crump, Schlichter, & Paulk, 1988; Newman, 1991, 1993, 1995, 2004, 2005, 2006; Newman & Zupko, 2006; Schlichter, 1979, 1981, 1986a, 1986b, 1987, 1988, 1997; Schlichter & Palmer, 1993). Built upon Calvin Taylor's (1967) multiple talent approach to teaching, Talents Unlimited is grounded on Guilford's (1956) work on the nature of intelligence and includes the multiple processes of the academic talent, productive thinking (PT), decision making (DM), planning (PL), forecasting (F), and communication (C; see Figure 1). In this TU framework, students use the traditional "school house" academic talent to recall and comprehend knowledge in a variety of disciplines. The other five higher order thinking skills are practical, powerful *smarts* used to process knowledge (academic talent) or to create new solutions to problems in the world of work.

Taylor's Multiple Talent Approach

During the mid-1950s, in response to the Sputnik launch, Calvin Taylor at the University of Utah focused on identifying innate, inborn, inherited, potential human resources, in addition to acquired knowledge resources. He posited that not all gifted individuals excelled in the same talents and found that typical intelligence tests measure only a small fraction (10%) of talents that have actually been identified. Taylor (1968) expected that identifying additional *smarts* would produce higher motivation in students and also would contribute to better development of our nation's human resource potential. The research of Gardner (1983) and Sternberg (1985) validated the work of Taylor (1967) and the "multi-faceted nature of human intelligence," and influenced the broadened definition of giftedness (Haskew, 1993).

Schlichter and the Talents Unlimited Model (TU)

During 1971 to 1974, Dr. Carol Schlichter operationalized instruc-

The Talents Unlimited Model

Talent Area: Productive Thinking
Definition: To generate many, varied, and unusual ideas or solutions and to add detail to the ideas.
Sample Activity: Students in a marine biology class think of many, varied, and unusual examples of locations for finding sea animals.

Talent Area: Decision Making
Definition: To outline, weigh, make final judgments, and defend a decision on the many alternatives to a problem.
Sample Activity: Sam decides on a focused topic for his investigative research project in high school statistics by weighing his alternatives using criteria questions: (a) Do I know a lot about this topic? (b) Can I locate enough additional information? (c) Do I have a passion for studying this topic?

Talent Area: Planning
Definition: To design a means for implementing an idea by describing what is to be done, identifying the resources needed, outlining a sequence of steps to take, pinpointing possible problems, and showing improvements in the plan.
Sample Activity: Following a study of misconceptions about nutritious snacks, first graders develop a plan for conducting a survey about other children's attitudes about snacks and nutrition.

Talent Area: Forecasting
Definition: To make a variety of predictions about the possible causes and/or effects of various phenomena.
Sample Activity: High school English students use Forecasting #2 to predict the many, varied effects of a particular ending for their narrative essay.

Talent Area: Communication
Definition: To use and interpret both verbal and written communication to express ideas, feelings, and needs to others.
Sample Activity: Middle school students use Communication #3 to generate many, varied similes that are commonly used clichés.

Talent Area: Academic
Definition: To develop a base of knowledge or skill about a topic or issue through acquisition of information and concepts.
Sample Activity: Third-grade students check the Internet to read the story of the *Nutcracker* before they attend the ballet performance.

Figure 1. Talents Unlimited Model.

tional strategies for Taylor's approach and developed a staff development model to assist teachers in learning how to craft activities that incorporated the talent processes in all subject areas. Figure 2 shows an example of a theme board that teachers use to teach the model. Chism and McLean (1980) conducted research that demonstrated that 2 years of integration of the Talents Unlimited thinking skills clusters into academic content areas resulted in significant improvements in students' academic achievement, creativity, self-esteem, and abilities to apply creative and critical modes of thinking. This article describes three ways that the Talents Unlimited model can be used to differentiate instruction by: (a) integrating higher level thinking skills into all core areas to teach all students creative and critical thinking skills; (b) developing general education and gifted education units of instruction that provide engaging, hands-on, constructivist approaches to learning for all students; and (c) providing a training process for students who demonstrate gifted behavior to organize and manage in-depth investigations of real problems that result in professional products and/or services for real audiences (Newman, 1991, 2005, in press).

Integrating Talents Unlimited in Core Subject Areas

Each of the talents can function in acquiring knowledge across all subject matter areas at all grade levels. In the multiple talent approach, students develop 22 subskills in creative and critical thinking while growing in knowledge. Every student in the classroom can be highly successful in at least one of these areas, and these successes translate into improved student achievement, self-concept, and creativity (Schlichter, 1979).

Practicing Productive Thinking

Productive thinking is synonymous with Torrance's (1962) definition of creativity. A productive thinker is a creator, an inventor, a problem solver; that is, one who thinks of *many ideas* (fluency), *varied ideas* (flexibility), *unusual ideas* (originality), and *adds to the ideas* (elaboration) for solving problems more creatively. At school there are numerous ways that productive thinking can be used in practical situations or through integration into the core curriculum. Productive thinking development not only boosts students' application of higher order thinking skills, it also can be used in helping students to learn social studies, math, science, art, drama, music, language arts, and in solving everyday problems. Two following examples, one at the elementary level and one

at the secondary level, illustrate how productive thinking can move students beyond recall and comprehension in expanding the academic base of learning.

For example, before reading a fifth-grade history chapter on colonization, students can apply productive thinking to think of many, varied, unusual strategies that England's King George might have used to force American colonists to pay their taxes. The teacher can structure the initial student responses in small-group settings, as a whole class, or as an individual assignment. After the students have thought of ideas, the teacher can record the responses on a chart and can guide students in adding to, or elaborating on their ideas that extend their thinking beyond the obvious answers. In the reinforcement stage of the lesson, the teacher can help the students analyze their responses by determining the number of responses they generated, the different categories of responses, and the originality of their responses. Then, students can compare their answers to those listed in a textbook or to the ones that the teacher lists when teaching the content. This approach to learning improves creative and critical thinking processes that improve retention of information.

Suppose that in a high school biology class, students are studying muscles, specifically joints. After the initial explanation of the kinds of joints (ball and socket, hinge, and pivot), the teacher asks the class to work in small groups to find many, varied, unusual examples of objects in the classroom that represent the movement of the three kinds of joints. Students are reminded to try to find unusual examples, ones that other groups won't consider. The teacher pushes the students to continue to add to their ideas, stretching their minds to find examples that are not so obvious. At the end of the lesson, the teacher lets students from each group share examples, and students debrief to determine similarities and differences in their ideas.

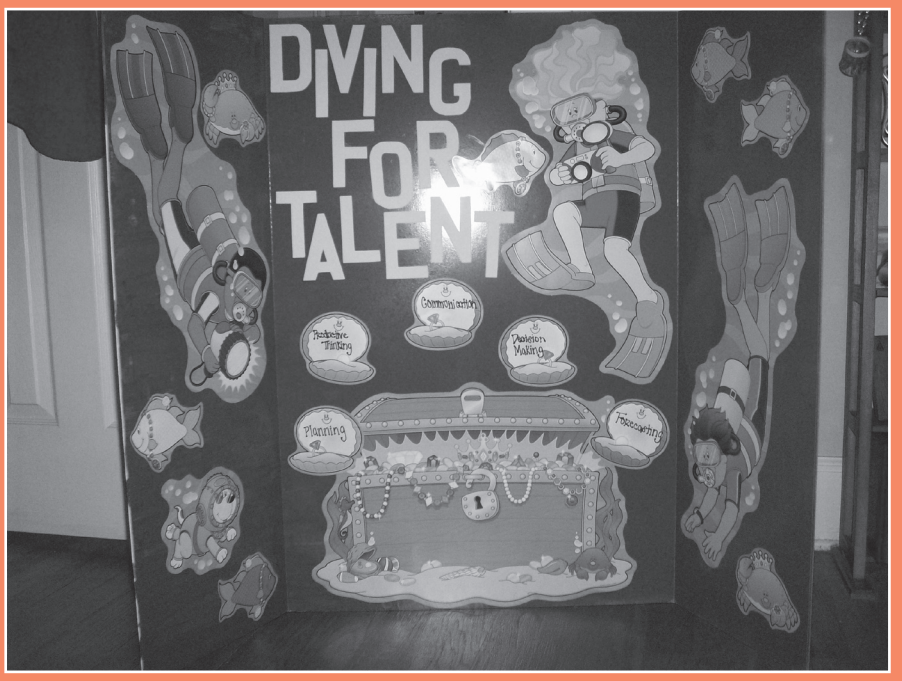

Figure 2. Example of a theme board.

Examples of using PT to extend core content at all grade levels and in all subject areas are limitless. For example, it is helpful to keep an ongoing list of academic examples, as well as practical productive thinking activities that students can practice. It also is advantageous for teachers to use professional learning communities at elementary grade-level meetings or at secondary departmental meeting to develop engaging lessons. The term *professional learning community* describes a collegial group of school staff who are committed to student learning in that they share a vision, work and learn collaboratively, visit and review other classrooms, and participate in decision making (Hord, 1997). The benefits include better informed and committed teachers, reduced isolation, and academic gains for students. Teachers can compile a notebook of lessons that they expand on each year, as they learn to integrate productive thinking activities seamlessly into core content or in practical examples:

1. In elementary school, if a class is having a seasonal party, the students can use productive thinking to think of many, varied, unusual snacks that will be both nutritious and tasty.
2. Third-grade students can use PT to think of many, varied, unusual examples of containers for planting seeds for a science experiment.
3. In high school forensics, students can think of many, varied, unusual topics for debate.
4. Students can think of many, varied, unusual strategies for solving a word problem in math.

Practicing Decision Making

Decision making is the most complex and difficult talent to master, however, if it is broken down into small steps, even young children or

Decision-Making Matrix
What Shoes Will I Wear on the Zoo Field Trip?

1. List the alternatives for consideration (horizontal spaces).
2. Write the criteria questions (vertical spaces) to consider.
3. Use this matrix to help weigh the alternatives for a decision. Consider each alternative carefully by asking each criteria question. Working across the page, assign weights using the rating scale at the bottom. Continue in the same way until you have considered each alternative by asking each criteria question. Add the ratings and identify the one that is the highest.

Alternatives	Criteria Questions				
	Are they comfortable?	Are they appropriate?	Do they match my outfit?	Are they in good condition?	Total Points
Boots	3	3	3	5	14
Tennis shoes	5	5	5	5	20
Dressy shoes	1	1	1	5	8
Flip flops	5	2	5	5	17

Rating Scale: 1 (poor) 2 3 4 5 (excellent)

4. Write the best alternative based on the highest rating number: Tennis Shoes
5. Write many, different reasons supporting your choice. (Turn your criteria questions into statements.)
    1. Tennis shoes are very comfortable.
    2. Tennis shoes are very appropriate for the zoo field trip.
    3. Tennis shoes match my outfit.
    4. Tennis shoes are in good condition.

Figure 3. Decision-making matrix example.

low-end learners can learn decision making if the content is concrete. Older students or high-end learners can manage more difficult content including abstract concepts. This talent has five key subskills:

1. List *alternatives* (usually not more than five) to consider for a decision.
2. List *criteria questions* for judging each alternative. (Initially, the teacher should develop all of these questions and let the students assist with this step. Once students understand the subskills, let them contribute to the process.) Criteria questions to consider might include categories of time, cost, feasibility, and effectiveness, in addition to ones that are specific to the activity.
3. Consider the alternatives by *weighing* each one by each criteria question. For this step, a decision-making grid is helpful (see Figure 3). Recording information at this stage is important because the process is complicated (i.e., analyzing the effectiveness of each alternative against each criteria question). (For primary students, a happy face decision-making grid is helpful.)
4. Step 4 asks the students to *record the best decision* based on tabulating the scores on the decision-making grid.
5. In Step 5, the students give *reasons* for choosing the specific alternative as the best decision. This step is simple. Return to Step 2 and rewrite the criteria questions as statements, listing them down the page.

As parents and teachers, we should begin early, guiding our children to make decisions that are appropriate for their level of maturity. For instance, most students can decide what they want for lunch or which shoes they want to wear to school on a certain day. Initially, in demonstrating the decision-making process, it is helpful to limit the alternatives to two; for example, do you want to wear this blue shirt or this green shirt? In beginning lessons, it also is beneficial to use concrete alternatives that the child can visualize because abstract alternatives (i.e., the concept of political parties) are difficult to process. Because decision making is such a complex thinking skills cluster, students need much support, but as they become more adept at the process, teachers can gradually provide less assistance, relying on students to take more responsibility for implementation. Examples of decision-making activities include:

1. In sixth-grade math class, students can decide whether or not the U.S. should convert completely to the metric system. Some criteria to consider might include:
    a. Is the cost factor reasonable?
    b. How readily will the public accept the change?
    c. Will the global society perceive the change to the metric system a positive change?

2. In a high school English class or for younger students who are high-end readers, decision making can be used to decide on a theme for *The Grapes of Wrath* (Steinbeck, 1939). Criteria questions might include:
   a. Does the theme capture the most important element in the novel?
   b. Can we express the theme in a single sentence?
   c. Is the theme concept-based and a universal idea?

3. In a middle school science class, or for elementary students who display gifted talent in science, the teacher can ask students to decide on the best way to prevent the occurrence of heart disease for someone who has inherited tendencies for the disease. Criteria questions might include:
   a. Will this solution have a long-term impact?
   b. Is this solution safe?
   c. Can I afford this solution?

4. Students in a U.S. history class or elementary students who demonstrate high levels of interest and potential in social studies can retrospectively consider the United States' decision to give control of the Panama Canal to Panama. Criteria questions could include:
   a. Is this decision good for the U.S.?
   b. Is this decision good for Panama?
   c. Will this decision ensure the continued maintenance of the Canal?

Some beginner, practical examples could include:

1. Which book will I choose for the book report this semester?
2. What will I select for lunch today in the cafeteria?
3. Will I decide on band or football as my extracurricular activity in middle school?
4. Which learning center will I choose today at school?
5. At what time each day will I feed my pet?

Again, it is helpful to keep a list of ideas that are appropriate decision-making activities for the students' developmental stages. As students become more adept at managing the subskills of decision making, teachers can increase the difficulty of the lessons, integrating the clusters into the core curriculum and gradually allowing students to take more of a lead in completing the steps of the talent.

Practicing Planning

The planning talent often is a good follow-up for decision making because solving a problem often requires a plan for implementation. The skills in planning call for forming the big picture, for fleshing out the details of a decision. While planning lends itself to all kinds of school activities such as field trips, topics for papers, and in-depth projects (Newman, 1991, 1993, 1995, 2004, 2005, 2006; Newman & Zupko, 2006), it also presents many applications to use in core content.

The planning talent has five steps (see Figure 4): (a) clearly stating what the students are planning in a complete sentence so that the reader understands; (b) listing materials and resources needed (make sure students list items down the page so they can check them off as they assemble them); (c) listing implementation steps and arranging them in order down the page so that students can check completion; (d) thinking of problems that could prevent the plan from being implemented; and (e) reviewing the plan for improvement and revising it using a bright colored pen. As students revise the materials section, they may think of additional steps to include in the plan, and while reviewing their to-do list, the process may trigger ideas for additional materials. Some specific curricular examples of planning might include:

1. In high school social studies, or, for elementary students who demonstrate gifted behavior, plan the school's mock election for local or national candidates.
2. In science at any level, plan an invention to solve a problem related to global warming.
3. In chemistry, use the planning talent to solve a subproblem related to high gasoline prices. In the first step of planning, be sure to have students identify the problem and the goal for the specific problem.
4. In American government, use the planning talent to reconstruct a plan demonstrating how an amendment is added to the U.S. Constitution.

Implementation is an expected follow-up to developing a plan, as it makes the plan more practical and realistic. A template such as the one shown in Figure 4 is helpful in organizing students' thoughts during planning.

Practicing Forecasting

Forecasting is defined as the prediction of many, varied causes or effects about a situation or event. The term *forecasting* suggests looking into the future, and many questions that result in forecasting are stated in the future to elicit a prediction of an outcome, an effect, or a consequence. For example, "What might be the many, varied effects of dinosaurs roaming the Earth today?" On the other hand, forecast-

Planning

1. I am planning a _____.

2. These are the materials I will need:

_____ _____
_____ _____
_____ _____

3. These are the steps (in order) that I must take:

_____
_____
_____

(continue on back)

4. These are the problems that might prevent me from completing my plan.

_____
_____
_____

5. These are three solutions to the above problems:

_____
_____
_____

6. I have reviewed my plan and revised sections for improvement with bright ink.

Figure 4. Planning talent.

ing can be used to explain causes of events of the past. For example, we might ask, "What might be the many, varied causes of dinosaurs becoming extinct?" To distinguish between the two kinds of forecasting, we refer to forecasting causes as F #1, and we refer to forecasting effects as F #2.

Forecasting is a great tool that parents and teachers can use to help students elaborate on a current event in the newspaper or on the evening news. Examples might include:

1. What do you think might be the many, varied causes for so many deaths from the tsunami? (F #1)
2. What do you think the many, varied effects of this election will have on the number of Democrats in the House of Representatives? (F #2)

Forecasting also can be used effectively in core curriculum at all grade levels. For instance, the forecasting talent is an excellent thinking skills cluster to teach literacy.

3. In elementary school, begin reading *Cloudy With a Chance of Meatballs* (Barrett, 1978) to students. Once you have read the introduction and have established the setting with the concept that in the town of Chewandswallow, food rains from the sky, you can stop reading, and ask, "What might be the many, varied effects of living in a town like Chewandswallow?" (F #2) Or, take, for example, the book *Miss Nelson is Missing!* (Allard, 1977). Again, read until Miss Nelson is absent and the substitute comes to school. Stop reading, and ask the question, "What might be the many, varied causes of Miss Nelson's disappearance?" (F #1) Or, you might ask, "What might be the many, varied effects of Miss Nelson's being missing?" (F #2). After the students have listed several ideas, finish reading the book to compare effects that are similar and different.
4. A secondary example in literacy could include a discussion of *The Scarlet Letter* (Hawthorne, 1898), including an F #2 lesson on predicting the many, varied, effects of the story taking place in the 21st century. An extension activity could ask students to compare the effects in the novel with possible effects in today's world.
5. In high school consumer math, before teaching the lesson, students could use F #1 to predict the many, varied effects of not using credit cards (i.e., if installment buying was not possible).

Forecasting talents, like productive thinking, should be used *before* the lesson is taught; otherwise, students are just recalling what they have learned. Also, never use the two forecasting talents (F #1 causes and F #2 effects) in the same lesson, as it is likely to confuse students. Finally, have high-end students think deeper as they practice forecasting. For example, after students have completed a forecasting lesson, have them conduct research to verify some of their predictions and to critique the quality of their initial predictions. Finally, have students use their research findings to generate more complex predictions for the same lesson.

Practicing Communication

Communication, the fifth talent in the TU model, elicits both creative and critical thinking and is the talent that is most likely already being used by teachers at all grade levels. The main goal of the communication talent is to improve students' ability to apply more effective verbal and nonverbal language to share thoughts and

feelings. Another benefit of the communication talent is to generate language that goes beyond using tired, old clichés that teachers encounter every day in students' examples of written and oral language. Actually, the communication talent includes six small talents utilized one at a time, designated by the following nomenclature: C #1, C #2, C #3, C #4, C #5, and C #6. Communication talents can be used effectively in all subject areas from elementary to high school and with low-end learners to high-end learners.

Communication #1 gives many, varied, single words to describe something (an object or item). This talent requires students to brainstorm adjectives to describe nouns. It is helpful to have students designate a section in a notebook to record C #1 activities, because students actually know more expressive adjectives than the simple ones that they consistently use in their writing. Having students keep a list of adjectives increases their vocabulary and expands their use of more appropriate adjectives in writing assignments, especially in the descriptive mode.

For example, C #1 is an effective thinking skill cluster to use when introducing a unit and having students observe an object related to the unit. A teacher might introduce the Civil War in a fifth-grade social studies class by explaining that because soldiers were low on food, many of them had only boiled peanuts to eat. Students can employ all of their senses to observe a boiled peanut and list many, varied, single-words to describe it (e.g., squishy, wet, bumpy, coarse, salty). Later, a student might ask, "May we open the peanut?" This extension elicits another list of adjectives to describe the smooth peanut inside the shell. Later, when students are asked to write about the Civil War (or another topic), students can review their list of adjectives and incorporate them in their writing, resulting in more exciting, appropriate descriptions.

Communication #2 asks students to give many, varied, single words to describe someone's/something's feelings. An example appropriate for any grade level might be: "NASA just launched a satellite. Use C #2 Talent to think of many, varied, single-words to describe the feelings of the astronauts at the end of a mission when they land at Cape Canaveral." Some answers might include: exhilarated, frightened, elated, perplexed, anxious, fulfilled, cooperative, triumphant, victorious, and exhausted. Again, as in C #1, the teacher can have the students designate a section of their notebook to list the many, varied, single words to describe someone's feelings, so that they can easily access a list of words that are not overused clichés when they write descriptive, narrative, expository, and persuasive essays, or complete other assignments.

Communication #3 generates many, varied responses to a sentence stem in the form of a simile that uses the word *like* or *as.* For instance, provide a sample simile sentence stem for students such as:

- The (noun) is as (adjective) as: ___ _____ _____.
- The boiled peanut is as bumpy as: the dirt road to the small town in Meso-America.
- The boiled peanut is as bumpy as: the bark on the old oak tree in my grandmother's front yard.

Encourage students to be specific and to give details to make their sentences more interesting and complex. Again, have students section off a portion of their notebooks to record all similes created when they generate many, varied comparisons using similes, so that they are easily accessible whenever students are producing written or oral assignments.

Communication #4 is an affective talent that is less structured than the other talents in the TU model. When using this talent, students have an opportunity to share real-life experiences and accompanying emotions to express empathy. The teacher might ask, "Have you ever had an experience when you felt like the main character in the story? If so, can you share it with us?" It is important that we don't force students to respond; however, the teacher can give students the opportunity to reply in writing or orally, whichever best fits the situation.

Communication #5 is called the "catch-all talent" because it involves making a network of ideas using many, varied complete thoughts in oral or written language. The formats of ideas can range from a simple three-word phrase to a lengthy book. Other examples of C #5 include: speeches, songs, questions, poems, play scripts, short stories, advertising brochures, interviews, word problems, letters, invitations, and autobiographies. Communication #5 only relates to producing the first draft of a written product; editing and revision fall under skills of the academic talent. Communication #5 also can be facilitated with a large group of students, a small group, or with an individual.

Communication #6 is used to express feelings, thoughts, and needs without written or spoken words. Therefore, this talent includes pantomime; nonverbal arts such as music, dance, and sculpture; and visual arts. Communication #6 can be used in all content areas. As teachers assess students' learning styles, include C #6 to reach those students whose mode of thinking is kinesthetic. This talent is

easily integrated into any elementary subject and also can be used effectively in secondary school, especially in forensics, drama, social studies, and music.

For example, (a) in middle school science, students can draw a picture representing their feelings about caring for the environment (C #5); (b) in elementary music, students can use instruments to communicate different seasons of the year (C #6); or (c) in high school English, a small group of students can pantomime the lyrics of a poem with classical music playing in the background (C #6).

Certainly, there are numerous other ways to communicate; however, these six forms of communication were selected for the Talents Unlimited model because, according to Schlichter (1986a), they are the skills most often needed to communicate effectively. Each skill may be the focus of an entire activity. However, the also skills can be linked. A closer look at the skills of communication suggests that there is an implied hierarchy of complexity, ranging from the generation of single words, to phrases, to networks of ideas (Schlichter & Palmer, 1993).

Using the Talents Unlimited Model to Develop Integrated Units of Study

All of the talent clusters can be linked to each other to design integrated curriculum units appropriate for gifted students and general education students. For example, each summer at The University of Alabama, the Summer Enrichment Workshop is held for some 250 students who demonstrate gifted behavior. Teachers seeking an master's degree in gifted and talented design and teach two 3-week mini-courses infused with each of the talent clusters represented in the Talents Unlimited model. For example, in writers' workshop (Hobbs, 1993) students internalize the 22 subskills of PT, DM, PL, F, and C applied by professional writers. Students can use productive thinking to generate many, varied, unusual topics for consideration. Decision making follows, as student select no more than five topics for alternatives from which to choose the best topic. Criteria questions for deciding on one topic might include: (a) Do I like this topic? (b) Do I know enough about the topic? and (c) Will readers like this topic? The next step is to use planning to list resources, steps of implementation, and potential problems to solve. Forecasting is helpful in predicting causes and effects of a situation so that students can develop a rational ending to the written product. The Communication talent is valuable in using appropriate descriptive words (C #1 and C #2) and innovative comparisons that do not include overused clichés (C #3), expressing empathy in a story (C #4), creating drafts of the written product (C #5), and illustrating the product with drawings (C #6). The Talents Unlimited model equips the English/language arts student with tools needed for success in the writers' workshop process. Students are "more conscious of the strategies used in the process and [are] thereby better equipped for the journey" (Hobbs, 1993, p. 118).

Using Talents Unlimited to Create Real-World Problem-Solving Projects

One of the major tenets of implementing the Talents Unlimited model is that students also should be actively involved in improving their unique thinking skills. Burns (1987), Hébert (1992, 1993), Newman, (1991, 2005, 2006), Renzulli and Reis (1997), and Schlichter (1986b) have proposed a synthesis of content, process, and learning-how-to-learn skills for students who display gifted behavior, much like that which has caused adults to be recognized as gifted contributors to the knowledge and culture of mankind. *Talents for Type III's: A Guide for Becoming a Better Creator, Decision Maker, Planner, Predictor, and Communicator* (Newman, 2006) integrates the TU Model (Schlichter, 1986b) with the Schoolwide Enrichment Model's 10 steps (Renzulli & Reis, 1997) for guiding students through the creative productivity process.

Teachers of the gifted who are trained in the Schoolwide Enrichment Model (Renzulli & Reis, 1997) and in the Talents Unlimited model can guide students to focus on a passionate interest, to define the interest as a real-world problem, to progress through the steps of researching and solving the problem, and to develop a professional product and/or service for a real audience. Newman's research (1991, 2005, in press) reported positive effects in the quality and completion of projects and services developed by students who used the processes of the Talents Unlimited model to investigate problems and to develop culminating real-world projects and services, as compared to students who did not use the TU Model.

For example, two fourth graders who demonstrated gifted behavior used *Talents for Type III's* (Newman, 2006) to conduct a 2-year investigative research project about animals at the Birmingham Zoo, which resulted in an official grades K–2 guidebook, *Zooming Around.* Sarah and Elizabeth used productive thinking to brainstorm topics and decision making to focus a problem for their research; DM

also was critical in selecting animals to include in their book, determining the format of the guidebook, and selecting the most appropriate audience for their book. The girls used planning to structure meetings with the zoo officials and to organize the layout of the book, as well as the process for publishing the book. Forecasting proved to be helpful in making predictions about the impact of the book on its audience, on the effects of the students' not finishing the 2-year project, for preparation for conferences with mentors, to analyze causes and effects of successes and failures, and in forecasting the results of the students' actions on their progress. Communication talents were important in producing the guidebook (i.e., generating adjectives to describe each of the animals, using adjectives to describe the girls' feelings and to address those feelings like real-world authors when the zoo director returned the first draft with 22 corrections to be made within a short time).

Lessons Learned From Teaching Talents

Researchers have demonstrated that gaining proficiency in creative and critical thinking does not result in instruction directed at only learning subject matter; instead, students need explicit, direct attention toward improving their thinking (Beyer, 2001). This direct attention must be focused on procedures for implementing the skills (i.e., the step-by-step procedures). Integrating the talent processes into core content has produced significant gain in creative and critical thinking for students in general education (Schlichter, 1979) and in gifted education (Chism & McLean, 1980). Moreover, teachers have demonstrated that through excellent preservice experiences that employ the observation feedback cycle (Newman, in press), they can effectively learn to design and teach curriculum units in general or gifted education that integrate all 22 subskills of the talent processes. Finally, Newman's research (1991, 1995, in press) has reported that using the TU model as a training process for students who display gifted behavior can result in improved completion rates and quality of in-depth investigations of real problems that result in professional products and services.

Summary

Certainly educators have different perspectives about what skills, attitudes, and knowledge students need for success in the information-based society of the third millennium and imminent future. However, in order to meet the demands of our global society, we educators must think like futurists and must collaborate and share our expertise from the fields of general education and special education as we craft meaningful differentiated instructional experiences for all students. We must ensure that all students master higher order creative and critical thinking skills and aspire to the highest level of talent development humanly possible (Renzulli & Reis, 1997). The Talents Unlimited model provides teachers with research-based resources and instructional strategies that can be crafted into: (a) thinking skills lessons for all students in all content areas; (b) engaging units for students in special education, general education, and gifted education; and (c) an effective training process for students who demonstrate gifted behavior in completing quality investigations of real problems that result in professional products and services. Clearly, in today's world, in order to ensure that our nation continues to be one of the most productive in the world, educational school improvement must focus on talent development with all students learning to become complex thinkers, problem solvers, and creative producers, based on their strengths, interests, and abilities. GCT

References

Allard, H. (1977). *Miss Nelson is missing.* New York: Houghton Mifflin.

Archambault, F. X., Jr., Westberg, K., Brown, S., Hallmark, B., Zhang, W., & Emmons, C. (1993). Classroom practices used with gifted third and fourth grade students. *Journal for the Education of the Gifted, 16,* 13–28.

Barrett, J. (1978). *Cloudy with a chance of meatballs.* New York: Simon and Schuster.

Beyer, B. K. (2001). Practical strategies of direct instruction in thinking skills. In A. L. Costa (Ed.), *Developing minds: A resource book for teaching thinking* (pp. 393–400). Alexandria, VA: Association for Supervision and Curriculum Development.

Burns, D. E. (1987). The effects of group training activities on students' creative productivity (Doctoral dissertation, University of Connecticut, 1987). *Dissertation Abstracts International, 48,* 3072A.

Chism, B., & McLean, J. E. (1980). *Talents Unlimited program: Technical report summarizing research findings.* Tuscaloosa, AL: The University of Alabama. (ERIC Document Reproduction Service No. ED179556)

Crump, D., Schlichter, C., & Paulk, B. E. (1988). Teaching HOTS in the middle and high school: A district-level initiative in developing higher-order thinking skills. *Roeper Review, 10,* 205–211.

Gardner, H. (1983). *Frames of mind.* New York: Basic Books.

Guilford, J. P. (1956). Structure of intellect. *Psychological Bulletin, 53,* 267–293.

Haskew, B. (1993). Talents Unlimited: Reflections, directions, projections. In C. L. Schlichter & R. W. Palmer (Eds.), *Thinking smart: A primer of the Talents Unlimited model* (pp. 141–158). Mansfield Center, CT: Creative Learning Press.

Hawthorne, N. (1898). *The scarlet letter.* New York: Doubleday & McClure.

Hébert, T. P. (1992). Creative productivity: Who gets involved? Who benefits? *Gifted Child Today, 15*(6), 8–13.

Hébert, T. P. (1993). Reflections at graduation: The long-term impact of elementary school: Experiences in creative productivity. *Roeper Review, 16,* 22–28.

Hobbs, D. (1993). Using the "write" talent: Talents Unlimited and the writing process. In C. L. Schlichter & R. W Palmer (Eds.), *Thinking smart: A primer of the Talents Unlimited model* (pp. 103–118). Mansfield Center, CT: Creative Learning Press.

Hord, S. M. (1997). *Professional learning communities: What are they and why are they important?* Retrieved January 31, 2008, from http://www.sedl.org/change/issues/issues61.html

McElroy, E. J. (2005). *Where we stand: NCLB's unintended consequences.* Retrieved July 25, 2007, from http://www.aft.org/pubs-reports/american_teacher/mayjune05/stand.htm

Meier, D., & Wood, G. (Eds.). (2004). *Many children left behind: How the No Child Left Behind Act is damaging our children and our schools.* Boston: Beacon Press.

National Center on Education and the Economy. (2006). *Tough choices or tough times.* Retrieved May 26, 2008, from http://www.skillscommission.org

Newman, J. L. (1991). The effects of the Talents Unlimited model on students' creative productivity (Doctoral dissertation, The University of Alabama, 1991). *Dissertation Abstracts International, 52,* 3525A.

Newman, J. L. (1993). The Talents Unlimited model and its effect on students' creative productivity. In C. L. Schlichter & R. W. Palmer (Eds.), *Thinking smart: A primer of the Talents Unlimited model* (pp. 141–158). Mansfield Center, CT: Creative Learning Press.

Newman, J. L. (1995). The Talents Unlimited model and its effects on student' creative productivity. In E. Jean Gubbins (Ed.), *Research related to the Enrichment Triad Model* (pp. 93–105). Storrs: National Research Center on the Gifted and Talented, University of Connecticut.

Newman, J. L. (2004). *Talents and investigative research: What works!* Mobile, AL: Talents Unlimited International.

Newman, J. L. (2005). Talents and Type III's: The effects of the Talents Unlimited model on creative productivity in gifted youngsters. *Roeper Review, 27,* 84–90.

Newman, J. L. (2006). *Talents for Type IIIs: A guide for helping students become better creators, decision makers, planners, predictors, and communicators.* Mansfield Center, CT: Creative Learning Press.

Newman, J. L. (in press). Service-learning as creative productivity: An emphasis on project quality and completion. *Information for Action: A Journal on Service-Learning Research With Children and Youth*.

Newman, J. L., & Zupko, S. L. (2006). TALENTed and Type III: An effective learning strategy for gifted students who are learning disabled. *TEACHING Exceptional Children Plus, 2*(5) Article 4. Retrieved August 13, 2006, from http://escholarship.bc.edu/education/tecplus/vol2iss5/art4

Renzulli, J. S., & Reis, S. M. (1997). *The schoolwide enrichment model.* Mansfield Center, CT: Creative Learning Press.

Schlichter, C. L. (1979). The multiple talent approach to the world of work. *Roeper Review, 2,* 17–20.

Schlichter, C. L. (1981). The multiple talent approach in mainstream and gifted programs. *Exceptional Children, 48,* 144–50.

Schlichter, C. L. (1986a). Talents Unlimited: An inservice education model for teaching thinking skills. *Gifted Child Quarterly, 30,* 119–123.

Schlichter, C. L. (1986b). Talents Unlimited: Applying the multiple talent approach in mainstream and gifted programs. In J. S. Renzulli (Ed.), *Systems and models for developing programs for the gifted and talented* (pp. 352–390). Mansfield Center, CT: Creative Learning Press.

Schlichter, C. L. (1987). Thinking skills instruction for all classrooms. *Gifted Child Today, 10*(2), 3–8.

Schlichter, C. L. (1988). Extending Talents Unlimited to secondary schools. *Educational Leadership, 45*(7), 36–40.

Schlichter, C. L. (1997). Partners in enrichment: Preparing teachers for multiple ability classrooms. *TEACHING Exceptional Children, 29*(4), 4–9.

Schlichter, C. L., & Palmer, W. R. (Eds.). (1993). *Thinking smart: A primer of the Talents Unlimited model.* Mansfield Center, CT: Creative Learning Press.

Steinbeck, J. (1939). *The grapes of wrath.* New York: Viking Press.

Sternberg, R. (1985). *Beyond IQ: A triarchic theory of human intelligence.* New York: Cambridge University Press.

Taylor, C. W. (1967). Questioning and creating: A model for curriculum reform. *Journal of Creative Behavior, 1,* 22–33.

Taylor, C. W. (1968). Cultivating new talents: A way to reach the educationally deprived. *Journal of Creative Behavior, 2,* 83–90.

Tomlinson, C. (1995). *How to differentiate instruction in mixed-ability classrooms.* Alexandria, VA: Association for Supervision and Curriculum Development.

Torrance, E. P. (1962). *Guiding creative talent*. Englewood Cliffs, NJ: Prentice-Hall.

Westberg, K. L., Archambault, F. X., Jr., Dobyns, S. M., & Salvin, T. J. (1993). The classroom practices observation study. *Journal for the Education of the Gifted, 16,* 29–56.